3.3.1.8 Warmwater Streams

3.3.1.8.1 Community Overview

Warmwater streams are flowing waters with maximum water temperatures typically greater than 25 degrees Celsius. They usually have watershed areas less than 500 square miles and mean annual flow rates of less than 200 cubic feet per second. These streams are common statewide, particularly in southeastern and east-central Wisconsin. A rich fish fauna, dominated by warmwater species in the families Cyprinidae, Catostomidae, Centrarchidae, and Percidae can be found in warmwater streams.

Streams modified by dams, agricultural drainage, or increased flows due to changes in land cover have lost varying degrees of their pre-development biological productivity and diversity. Improvement work has focused on three main objectives: reducing bank erosion and in-stream sedimentation, restoring a more natural channel morphology and alignment, and increasing in-stream cover.

3.3.1.8.2 Vertebrate Species of Greatest Conservation Need Associated with Warmwater Streams

Twenty-three vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with warmwater streams (Table 3-66).

Table 3-66. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with warmwater streams.

Species Significantly Associated with Warmwater Streams
Fish
Ozark Minnow
Greater Redhorse
Slender Madtom
Starhead Topminnow
Gilt Darter
Herptiles
Blanchard's Cricket Frog
Pickerel Frog
Mink Frog
Wood Turtle
Queen Snake
Species Moderately Associated with Warmwater Streams
Birds
Solitary Sandpiper
Fish
Redside Dace
Pugnose Shiner
Redfin Shiner
Longear Sunfish
Least Darter
Herptiles
Blanding's Turtle
Mammals
Water Shrew
Northern Long-eared Bat
Silver-haired Bat
Eastern Red Bat
Hoary Bat
Moose

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-66 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both warmwater streams and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of warmwater streams in each of the Ecological Landscapes (Tables 3-67 and 3-68).

- Using the analysis described above, a species was further selected if it had both a significant association with warmwater streams and a high probability of occurring in an Ecological

Landscape(s) that represents a major opportunity for protection, restoration and/or management of warmwater streams. These species are shown in Figure 3-8.

Table 3-67. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with warmwater streams and their association with Ecological Landscapes that support warmwater streams.

Warmwater Streams

Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Fish (5)*					Herptiles (5)				
	Ozark Minnow	Greater Redhorse	Slender Madtom	Starhead Topminnow	Gilt Darter	Blanchard's Cricket Frog	Pickerel Frog	Mink Frog	Wood Turtle	Queen Snake
MAJOR										
Central Lake Michigan Coastal										
Forest Transition										
North Central Forest										
Northern Highland										
Northern Lake Michigan Coastal										
Southeast Glacial Plains										
Southern Lake Michigan Coastal										
Southwest Savanna										
Superior Coastal Plain										
Western Prairie										
IMPORTANT										
Central Sand Hills										
Central Sand Plains										
Northwest Lowlands										
Northwest Sands										
PRESENT (MINOR)										
Northeast Sands										
Western Coulee and Ridges										

Color Key

= **HIGH probability the species occurs in this Ecological Landscape**

= **MODERATE probability the species occurs in this Ecological Landscape**

= **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

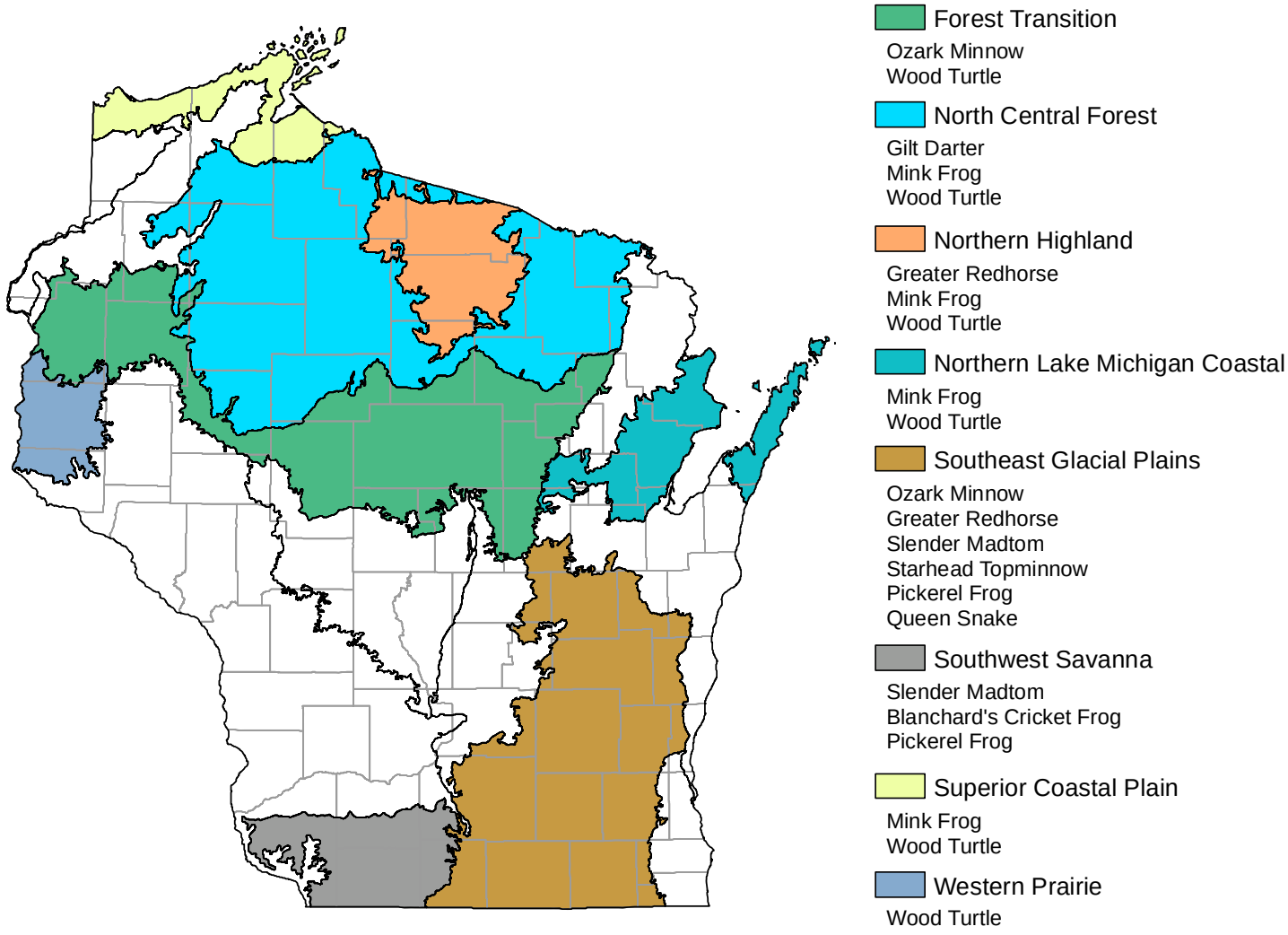
Table 3-68. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with warmwater streams and their association with Ecological Landscapes that support warmwater streams.

Warmwater Streams	Birds (1)*	Fish (5)					Herptiles (1)	Mammals (6)					
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Solitary Sandpiper	Redside Dace	Pugnose Shiner	Redfin Shiner	Longear Sunfish	Least Darter	Blanding's Turtle	Water Shrew	Northern Long-eared Bat	Silver-haired Bat	Eastern Red Bat	Hoary Bat	Moose
MAJOR													
Central Lake Michigan Coastal	M	M					M		M	M	M		
Forest Transition	M	M		H				M	M	M	H		
North Central Forest	M				H			H	M	H	M		
Northern Highland	M		H		H	M		H			M		M
Northern Lake Michigan Coastal	M		M	M	M		M	H	M	M	M	M	
Southeast Glacial Plains	M	H	M	H	H	H	H		M	M	M	M	
Southern Lake Michigan Coastal	M						H						
Southwest Savanna	M						H		M		M		
Superior Coastal Plain	M							H	M	M	M	M	M
Western Prairie	M						H						
IMPORTANT													
Central Sand Hills	M					H	H	M	M	M	M	M	
Central Sand Plains	M						H	M	M	M	M	M	
Northwest Lowlands	M				M			H	M	M	M	M	M
Northwest Sands	M		H			H	H	H					
PRESENT (MINOR)													
Northeast Sands	M						M	H					
Western Coulee and Ridges	M	H					H		H	M	M	M	

Color Key
H = HIGH probability the species occurs in this Ecological Landscape
M = MODERATE probability the species occurs in this Ecological Landscape
= LOW or NO probability the species occurs in this Ecological Landscape

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-8. Vertebrate Species of Greatest Conservation Need that have ***both* a significant association with warmwater streams ***and*** a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of warmwater streams.**



3.3.1.8.3 Threats and Priority Conservation Actions for Warmwater Streams

The following list of threats and priority conservation actions were identified for warmwater streams in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Tables 3-67 and 3-68 unless otherwise indicated.

Threats

- Poor watershed land-use practices and non-point source pollution are leading to habitat degradation and loss and imbalances in water chemistry and water temperature regulation.
- Past channelization for flood control and agricultural drainage has destroyed instream habitat, wetlands, and floodplain function.
- Dams have eliminated stream habitat, blocked migrations, and fragmented populations.

Priority Conservation Actions

- Improve watershed and riparian land-use practices to reduce non-point source pollution.
- Restore instream habitat and reconnect streams to their floodplains, as is being attempted along the Pike River (Kenosha County).
- Remove dams or install effective fish passage at dams.